## CLAIMS

What is claimed is:

1. An optical chip, comprising: waveguides integrated on the optical chip, the waveguides having varied widths dependent upon how many waveguides each of the waveguides cross with respect to each other.

2. The optical chip as recited in Claim 1, wherein a wider width is selected for a portion of the waveguides with a greater quantity of waveguides crossed when compared to another portion of the waveguides with a fewer quantity of waveguides crossed.

3. The optical chip as recited in Claim 1, wherein a narrower width is selected for a portion of the waveguides with a fewer quantity of waveguides crossed when compared to another portion of the waveguides with a greater quantity of waveguides crossed.

4. The optical chips as recited in Claim 1, wherein the widths are varied to equalize optical losses associated with waveguides that cross a greater quantity of waveguides when compared to waveguides that cross a fewer quantity of waveguides.

5. The optical chips as recited in Claim 1, wherein the widths are varied to reduce optical losses associated with waveguides that cross a greater quantity of waveguides and increase optical losses associated with waveguides that cross a fewer quantity of waveguides, such that the overall optical losses between the waveguides that cross a greater quantity of waveguides and the

waveguides that cross a fewer quantity of waveguides are more equalized with respect to each other.

6. An optical chip, comprising:

a first waveguide having a width X;

a second waveguide having a width Y, the second waveguide crossing the first waveguide; and

a plurality of other waveguides, wherein a greater quantity of the plurality of other waveguides cross the first waveguide than the second waveguide, and wherein the width X for the first waveguide is wider than the width Y for the second waveguide.

7. The optical chip as recited in Claim 6, further including a third waveguide that does not cross any other waveguides on the chip and has a width Z, which is wider than the width Y, but narrower than the width X.

8. The optical chip as recited in Claim 6, wherein the width X is between about 6 microns and 11 microns.

9. The optical chip as recited in Claim 6, wherein the width Y is between about 4 microns and 6 microns.

10. The optical chip as recited in Claim 6, wherein the width X for the first waveguide is made wider than the width Y for the second waveguide to decrease optical losses associated with crossing more waveguides than the second waveguide.

11. The optical chip as recited in Claim 6, wherein the width Y for the second waveguide is made narrower than the width X for the first waveguide to increase optical losses associated with crossings less waveguides than the first waveguide.

12. The optical chip as recited in Claim 6, wherein the width X for the first waveguide is made wider than the width Y for the second waveguide to decrease optical losses associated with crossings more waveguides than the second waveguide, and the width Y for the second waveguide is made narrower than the width X for the first waveguide to increase optical losses associated with crossings fewer waveguides than the first waveguide, such that the overall optical losses between the first and second waveguides are more equalized with respect to each other.

13. An optical chip, comprising:

a first waveguide;

a second waveguide that crosses the first waveguide;

a plurality of other waveguides, wherein a greater quantity of the plurality of other waveguides cross the first waveguide than the second waveguide; and

a void inserted in vicinity of the crossing between the first and second waveguides, the void configured to reduce optical losses in the first waveguide and simultaneously increase optical losses in the second waveguide, such that the overall optical losses between the first and second waveguides are substantially equalized with respect to each other.

14. The optical chip as recited in Claim 13, wherein the void provides a gap of about 2 microns between the first and second waveguides.

15. The optical chip as recited in Claim 13, wherein the void in the first waveguide is generally parallel to a longitudinal axis of the first waveguide.

16. The optical chip as recited in Claim 13, wherein the void in the second waveguide is generally perpendicular to a longitudinal axis of the second waveguide.

17. A method, comprising: varying widths of waveguides that cross each other in an optical device, by making a width of one or more of the waveguides that have more crossing wider than a width of one or more the waveguides that experience fewer crossing.

18. The method as recited in Claim 17, wherein the widths are varied to reduce optical losses associated with waveguides that cross a greater quantity of waveguides and increase optical losses associated with waveguides that cross a fewer quantity of waveguides, such that the overall optical losses between the waveguides that cross a greater quantity of waveguides and the waveguides that cross a fewer quantity of waveguides are more equalized with respect to each other.

19. A method comprising: inserting one or more voids between waveguide crossings of on an optical device, the one or more voids configured to reduce optical losses in waveguides that have more waveguide crossings and

simultaneously increase optical losses in waveguides that have fewer waveguide crossings, such that the overall optical losses between the waveguides with more waveguide crossings and the waveguides with fewer waveguides crossings are more equalized with respect to each other.

20. The method as recited in Claim 19, wherein the one or more voids are inserted between waveguide crossings generally parallel to a longitudinal axis of the waveguides that have more waveguide crossings and generally perpendicular to a longitudinal axis of the waveguides that have fewer waveguide crossings.